Energy Efficiency

What is the Hazard or Problem:

Existing K-12 schools and new K-12 school construction often are not optimized for energy efficiency.

The Solution:

Become aware of approaches to make schools more energy efficient and take advantage of existing financial incentives to support the implementation of measures to increase energy efficiency in the school.

Applicable Regulations/Consensus Standards:

Few regulations or standards are in place beyond minimum code requirements. Numerous guidelines, however, are available to act as resource guides, including the upcoming High Performance Schools Exchange, the Advanced Building Guidelines, the Collaborative for High Performance Schools, Energy$mart Schools Design Guidelines, the High Performance Schools Buildings, Resource and Strategy Guide, the LEED Green Building Rating System

Who in your Town or School Can Help:

The electric and gas utilities that service that area.
Other organizations and agencies that support energy efficiency in schools, including MA Division of Energy Resources, Massachusetts Technology Collaborative, and the upcoming High Performance School Exchange.

Who to contact for free Government or Other Assistance with the Problem:

Regarding the MA Division of Energy Resources, Eileen B. McHugh, eileen.mchugh@state.ma.us or 617-727-4732, ext. 205.

Regarding the Collaborative for High Performance Schools, Kimberly Ashton Cullinane, MA Technology Collaborative, ashton@mtpc.org or 508-870-0312 and Andrea Ranger, MA Dept of Education, aranger@doe.mass.edu or 781-338-6531.

Regarding the High Performance Schools Exchange: Jim Rutherford, Northeast Energy Efficiency Partnerships, jrutherford@neep.org or 781-860-9177.

Further Reading:

1. Electric utility energy efficiency programs:
    a. Cape Light Compact: http://www.capelightcompactenergysave.com/government.html#Medium%20and%20Large%20Government%20Retrofit and http://www.capelightcompactenergysave.com/government.html#Government%20New%20Construction
    b. National Grid USA (Massachusetts Electric Company): http://www.masselectric.com/bus/effic/init/index.htm and http://www.masselectric.com/bus/effic/2000/index.htm
    c. Northeast Utilities (Western Massachusetts Electric): http://www.wmeco.com/programs/pdf/energy_municiples.pdf and http://www.wmeco.com/programs/pdf/construction.pdf
    d. NStar Electric: http://www.nstaronline.com/your_business/Efficiency_elec_retro_prog.htm and http://www.nstaronline.com/your_business/Efficiency_elec_constr_prog.htm
    e. Unitil - Fitchburg Gas and Electric Light Company: http://services.unitil.com/fge/bus_energy_efficiency_programs.asp?t=2
2. Natural gas utility energy efficiency programs:
    a. Bay State Gas: http://www.baystategas.com/business/eneraudit.htm#malb
    b. Berkshire Gas: http://www.berkshiregas.com/sets/conservation.html
    c. KeySpan Energy Delivery: http://www.keyspanenergy.com/psbusiness/energy/heating_program_ma_kedma.jsp
    d. NStar Gas: http://www.nstaronline.com/your_business/Efficiency_gas_custom_prog.htm
    e. Unitil - Fitchburg Gas and Electric Light Company (FG&E): http://services.unitil.com/fge/bus_energy_efficiency_programs.asp?t=3
3. Statewide energy efficiency programs available through electric and gas utilities
    a. Building Operators Certification Program: http://www.neep.org/boc/index.html.
    b. Cool Choice: http://www.coolchoice.net/descript.htm
    c. MotorUp Premium Efficiency Motor Initiative: http://www.motoruponline.com/.
4. Other financial incentives and financial assistance:
    a. Energy Efficiency Financing Directory: http://www.iclei.org/manuals/altfdir1.htm#intro
    b. Massachusetts Division of Energy Resources (DOER): http://www.state.ma.us/doer/programs/pub_bld/icp
    c. Massachusetts Technology Collaborative: http://www.mtpc.org/RenewableEnergy/green_schools.htm and http://finance1.doe.mass.edu/sbuilding/
    d. U.S. EPA Environmental Finance Center Network: http://www.epa.gov/efinpage/efin.htm

5. Information resources on energy efficiency in K-12 schools:
    a. High Performance School Exchange: http://www.neep.org/HPSE/index.html
    b. MA Environmentally Preferable Purchasing Program: http://www.state.ma.us/ota/support/epp.htm
    c. Advanced Building Guidelines: http://www.newbuildings.org/ABG.htm
    d. Collaborative for High Performance Schools: http://www.mtpc.org/RenewableEnergy/green_schools/chps_standards.htm
    e. Energy$mart Schools Design Guidelines: http://www.eere.energy.gov/energysmartschools/building_maintaining.html
    f. High Performance Schools Buildings, Resource and Strategy Guide: http://www.sbicouncil.org/store/resources.php
    g. LEED Green Building Rating System: http://www.usgbc.org/LEED/LEED_main.asp

Sources for Information On Energy Efficiency
In Existing K-12 Schools and New Construction
and Renovation K-12 School Projects.[1]

Financial incentives available through electric and natural gas utilities:[2]

1. **Electric utility energy efficiency programs:**
   a. **Cape Light Compact:**
      i. **"Medium and Large Government Retrofit Program."** Qualified *existing* buildings are eligible for education, technical assistance, financial assistance, and commissioning services. See: http://www.capelightcompactenergysave.com/government.html#Medium%20and%20Large%20Government%20Retrofit
      ii. **"Government New Construction Program."** *New construction* incentives are based on the incremental equipment and labor costs of installing efficient equipment. See: http://www.capelightcompactenergysave.com/government.html#Government%20New%20Construction
   b. **National Grid USA (Massachusetts Electric Company):**
      i. **"Energy Initiative."** Provides technical consulting and financial incentives for replacing *existing* equipment with energy efficient alternatives. See: http://www.masselectric.com/bus/effic/init/index.htm
      ii. **"Design 2000*plus*."** Provides financial incentives and technical assistance to encourage the use of design features and electrical equipment that optimize energy efficiency in their *new construction*, renovation or remodeling projects. See: http://www.masselectric.com/bus/effic/2000/index.htm
   c. **Northeast Utilities (Western Massachusetts Electric):**
      i. **"Municipal Buildings Program."** Turnkey initiative provides technical and financial assistance to *existing* municipality-owned buildings. See: http://www.wmeco.com/programs/pdf/energy_municiples.pdf
      ii. **"Energy Conscious Construction."** Will pay the added cost to design and install higher efficient systems in *new construction* or major renovation projects. See; http://www.wmeco.com/programs/pdf/construction.pdf
   d. **NStar Electric:**
      i. **"Business Solutions."** Enables reduced energy consumption in *existing* buildings. Prescriptive rebates up to 50 percent and comprehensive rebates up to 75 percent of the total project cost. See: http://www.nstaronline.com/your_business/Efficiency_elec_retro_prog.htm
      ii. **"Construction solutions."** Provides rebates up to 75 percent of the incremental cost differential between standard base line and high-efficiency

[1] For an electronic copy of this information with active hyperlinks, contact Jim Rutherford, Northeast Energy Efficiency Partnerships, Inc. @ jrutherford@neep.org or call 781-860-9177, ext. 20.
[2] Schools within the service territories of municipally owned lighting plants should contact their utility Account Manager regarding possible energy efficiency incentives.

equipment in *new construction* and major renovation projects. See: http://www.nstaronline.com/your_business/Efficiency_elec_constr_prog.htm

e. **Unitil - Fitchburg Gas and Electric Light Company:**

i. **"Comprehensive Efficiency Program."** Provides rebate incentives of up to 50% of costs or the incremental cost of the efficient equipment above standard equipment. See: http://services.unitil.com/fge/bus_energy_efficiency_programs.asp?t=2

2. **Natural gas utility energy efficiency programs:**

a. **Bay State Gas.** "Partners in Energy Program" will pay 50% of the total installed costs of qualified conservation measures, up to a maximum of $50,000. See: http://www.baystategas.com/business/eneraudit.htm#malb

b. **Berkshire Gas.** May contribute up to 50% toward the installation of program-approved energy saving measures identified during an audit. See: http://www.berkshiregas.com/sets/conservation.html

c. **KeySpan Energy Delivery.** Provides cash rebates for the installation of high-efficiency gas heating and water heating equipment. See: http://www.keyspanenergy.com/psbusiness/energy/heating_program_ma_kedma.jsp

d. **NStar Gas.** Will pay up to 50% of the incremental cost between standard and high-efficiency equipment. See: http://www.nstaronline.com/your_business/Efficiency_gas_custom_prog.htm

e. **Unitil - Fitchburg Gas and Electric Light Company (FG&E).** "GasNetworks Rebate Program" provides rebates for high-efficiency furnaces and boilers, high – efficient water heaters and infrared heating equipment. See: http://services.unitil.com/fge/bus_energy_efficiency_programs.asp?t=3

3. **Statewide energy efficiency programs available through electric and gas utilities** (coordinated by Northeast Energy Efficiency Partnerships, Inc.):

a. **Building Operators Certification Program (BOC).** A competency-based training and certification program for building operators designed to improve the energy efficiency of commercial buildings. See: http://www.neep.org/boc/index.html. Participating utilities:

i. Cape Light Compact,
ii. Fitchburg Gas and Electric Light Company,
iii. KeySpan Energy Delivery,
iv. National Grid,
v. NStar Electric & Gas, and
vi. Western Massachusetts Electric Company.

b. **Cool Choice.** Pays rebates to help defray the cost of purchasing high-efficiency HVAC equipment. In most cases, will cover up to 80% of the incremental cost to purchase high-efficiency equipment. See: http://www.coolchoice.net/descript.htm. Participating utilities:

i. Cape Light Compact,
ii. National Grid (Massachusetts Electric Company & Nantucket Electric Company),
iii. NStar Electric,
iv. Unitil/Fitchburg Gas & Electric Light Company, and
v. Western Massachusetts Electric Company

c. **MotorUp Premium Efficiency Motor Initiative.** Provides rebates for purchasing NEMA premium efficiency motors. See: http://www.motoruponline.com/. Participating utilities:
   i. Cape Light Compact,
   ii. Unitil / Fitchburg Gas & Electric,
   iii. Massachusetts Electric,
   iv. Nantucket Electric,
   v. National Grid, USA,
   vi. NSTAR Electric & Gas, and
   vii. Western Mass Electric

Financial incentives available through other funding sources:

1. **Energy Efficiency Financing Directory.** From International Council for Local Environmental Initiatives (ICLEI). Directory of companies specializing in financing and leasing energy efficiency equipment and energy service companies (ESCOs) that develop, install, and finance energy efficiency projects. See: http://www.iclei.org/manuals/altfdir1.htm#intro
2. **Massachusetts Division of Energy Resources (DOER).** "Energy Conservation Improvement Program" (ECIP) provides grants to public schools to help cut energy costs. Grants fund eligible energy conservation projects identified through an energy audit provided by DOER. See: http://www.state.ma.us/doer/programs/pub_bld/icp
3. **Massachusetts Technology Collaborative:**
   a. **"Green Schools Initiative"** (in cooperation with the MA Department of Education) has provided grants to design and build high performance, resource and energy efficient green schools. September 2003: no grants are available at this time. Pending demonstration projects will be utilized in developing standards where future school construction with increased energy efficiency will be eligible for 2% increased funding. See: http://www.mtpc.org/RenewableEnergy/green_schools.htm and http://finance1.doe.mass.edu/sbuilding/
   b. **"Clustered PV Installation Program."** Local organizations funded by MTC are facilitating the installation of approximately 250 photovoltaic (PV) systems on homes and businesses in clustered regions throughout the state. Provide outreach activities in their communities and offer installation rebates to lower the PV system purchase cost for consumers. See: http://www.mtpc.org/RenewableEnergy/Solar_to_Market.htm
   c. **"Open PV Installation Grant"** offers for up to $350,000 per project for turnkey development of at least 10 kilowatts (kW) of installed PV system(s) at facilities that are connected to the local electric distribution utility in Massachusetts. See: http://www.masstech.org/Grants_and_Awards/SMI/03SMI01Info.htm
   d. **"Premium Power Installation Grant"** provides up to twenty-five percent (25%) of the total capital costs, up to $2,000,000 per project, for the purchase and installation of fuel cells as part of systems to provide high quality power at various sites in Massachusetts. See: http://www.mtpc.org/Grants_and_Awards/FCP/01PP02Info.htm
4. **U.S. EPA Environmental Finance Center Network.** From EPA Region I/New England. The Muskie School of the University of Southern Maine makes available to New England municipalities, public agencies, and environmental businesses expertise on financial issues. See:http://www.epa.gov/efinpage/efin.htm

5. **Other funding sources:**
    a. **The Foundation Center**. "Educational Funding Watch" helps grant seekers respond to requests for proposals from private and community foundations. See: http://fdncenter.org/
    b. **The Lorrie Otto Seeds for Education Fund**. Gives small monetary grants to educational organizations for creating natural landscapes using native plants. See: http://www.for-wild.com/seedmony.htm
    c. **National Gardening Association**. Awards 400 Youth Garden Grants provide to schools an assortment of tools, seeds, and garden. See: http://www.kidsgardening.com/grants.asp
    d. **New England Green School Grants**. From the Center for Environmental Education (CEE), Antioch New England Institute. Small grants awards in the six New England States for environmentally oriented education projects. See: http://www.schoolsgogreen.org/Grants/index.html
    e. **SchoolGrants**. Resource database for K-12 grant opportunities. See: http://www.schoolgrants.org/welcome.htm

Information resources on energy efficiency in K-12 schools:

1. **High Performance School Exchange**. From Northeast Energy Efficiency Partnerships. Regional initiative to deliver high-level technical and informational resources to various audiences involved in the design and execution of High Performance school construction and renovation in the Northeast. To be inaugurated in Fall 2003. See: http://www.neep.org/HPSE/index.html
2. **MA Environmentally Preferable Purchasing Program** (EPP). Provides information on the State's efforts in procuring environmentally preferable products, state EPP contracts, guides, upcoming events, and reports. Such products or services may include those that contain recycled content, minimize waste, conserve energy or water, or reduce the amount of toxics disposed or consumed by the user. See: http://www.state.ma.us/ota/support/epp.htm
3. **New school energy efficiency design and construction guidelines and standards:**
    a. **Advanced Building Guidelines**. From New Buildings Institute. Newly published guideline that provides measurable energy targets for high-performance commercial buildings (including schools) that incorporate building systems that meet or exceed code performance. See: http://www.newbuildings.org/ABG.htm
    b. **Collaborative for High Performance Schools** (CHPS). From Massachusetts Technology Collaborative. Information resources that aim to increase the energy efficiency in new school design and construction. See: http://www.mtpc.org/RenewableEnergy/green_schools/chps_standards.htm
        i. **Best Practices Manual, Massachusetts Version, Vol. I – Planning.** Written for school district officials to educate them on what the elements that make up a high performance school. See: http://www.eley.com/MTC/CHPSMA_vI.pdf
        ii. **Best Practices Manual, Massachusetts Version, Vol. II – Design.** Written for design teams as a more detailed reference guide. See: http://www.eley.com/MTC/CHPSMA_vII_1.pdf and http://www.eley.com/MTC/CHPSMA_vII_2.pdf

c. **Energy$mart Schools Design Guidelines.** From the Rebuild America Program of U.S. D.O.E. A suite of products developed to promote energy efficiency and renewable energy in schools. See: http://www.eere.energy.gov/energysmartschools/building_maintaining.html

   i. **Energy Design Guidelines for High Performance Schools.** Seven guidelines containing recommendations generally appropriate for seven different climates within the US. See: http://www.eren.doe.gov/energysmartschools/order.html

   ii. **National Best Practices Manual for Building High Performance Schools.** Developed specifically for architects and engineers who are responsible for designing and retrofitting schools, and for the project managers who work with the design teams. See: http://www.eren.doe.gov/energysmartschools/pdfs/31545.pdf

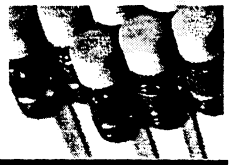
   iii. School decision-maker brochures:

      1. **"How parents and teachers are helping to create better environments for learning."** See: http://www.eren.doe.gov/energysmartschools/pdfs/31603.pdf
      2. **"How school administrators and board members are improving learning and saving money."** See: http://www.nrel.gov/docs/fy01osti/30558.pdf
      3. **"How school facilities managers and business officials are reducing operating costs and saving money."** See: http://www.nrel.gov/docs/fy01osti/30559.pdf

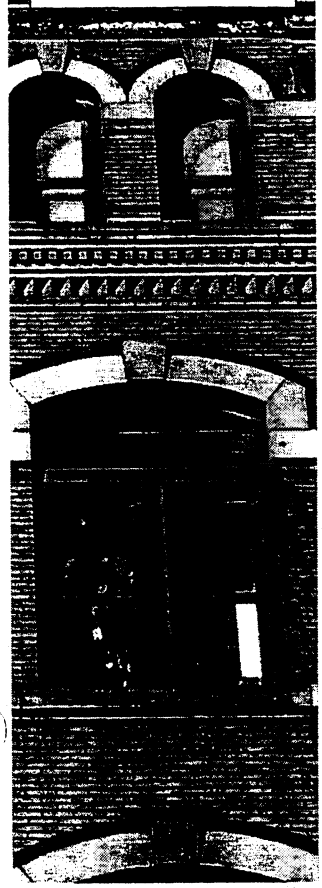
d. **"High Performance Schools Buildings, Resource and Strategy Guide."** From the Sustainable Building Industry Council (SBIC). Publication shows how to hire architects and engineers capable of providing sustainable design, and how to work with them at each phase of the design and construction process. See: http://www.sbicouncil.org/store/resources.php

e. **LEED Green Building Rating System.** From the U.S. Green Building Council. The LEED (Leadership in Energy and Environmental Design) Green Building Rating System is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. A point-based rating system evaluates building performance not only in relation to energy but many "sustainable" aspects. Considered by some to be the benchmark in the U.S. for evaluating sustainability. See: http://www.usgbc.org/LEED/LEED_main.asp

EPA United States Environmental Protection Agency | Air and Radiation (6202J) | DRAFT November 2000



Money Isn't All You're Saving



ENERGY STAR® is the easy way to make your schools more fiscally responsible because it uncovers the link between energy, financial, and environmental performance.

It is a registered mark of the United States Environmental Protection Agency (EPA) and Department of Energy (DOE). The ENERGY STAR label is awarded to buildings that rank in the top 25 percent of their class nationwide for energy performance and have indoor environmental quality that meets or exceeds industry standards.

ENERGY STAR is a trusted national brand in 30 categories of consumer electronics and appliances, as well as office buildings, schools, and homes. To learn more about ENERGY STAR, visit www.energystar.gov, or call the ENERGY STAR Hotline at 1-888-STAR-YES (1-888-782-7937).

ENERGY STAR®

Excellence in Energy Management

Schools & Energy: The Opportunity for Savings

The annual energy bill for the nation's 115,000 K-12 schools is about $6 billion. Our schools spend more money on energy than on computers and textbooks combined. However, $1.5 billion of that could be saved!

In a typical US school, nearly one-third of the energy used goes to waste because of outdated technologies (for example, lighting systems), old and poorly functioning equipment, and poor insulation in the building. The least energy-efficient schools use almost four times as much energy per square foot as the most energy-efficient ones.

Schools do not have to be rebuilt from the ground up to take advantage of major energy savings opportunities. Experience shows that cost-effective energy performance improvements in existing buildings can reduce energy bills by 25% to 30% on average.

ENERGY STAR: The Solution

By the end of 1998, ENERGY STAR education partners had invested nearly $300 million in their school building energy upgrades, saving $1.3 billion over the life of the investments, a four-to-one ratio.

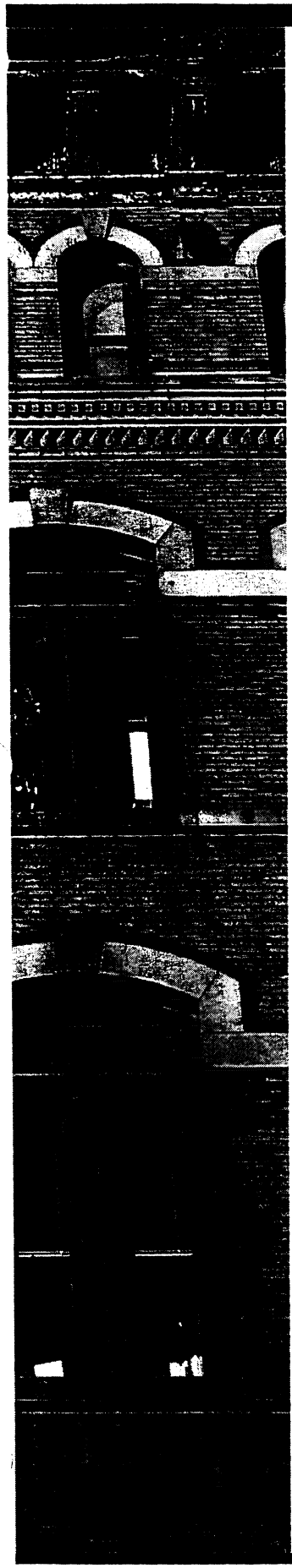
ENERGY STAR uncovers the link between energy, financial, and environmental performance for schools, homes, and office buildings. The ENERGY STAR label on a school signifies a top performing building that has achieved energy excellence! ENERGY STAR is the way to demonstrate responsible fiscal management and environmental stewardship.

The ENERGY STAR Performance Rating System and Your Schools

ENERGY STAR offers the only national rating system for energy performance in school buildings. The ENERGY STAR rating system, a part of portfolio manager, measures the energy performance of schools on a scale of 0 to 100. The score shows how a building compares to other schools in your district and nationwide. The rating system provides useful baseline information to help schools set energy

Creating Energy-Efficient, Healthy Learning and Teaching Environments

Many energy upgrades, such as those related to fans, motors, drives, and chiller/boiler systems, generally do not degrade indoor environmental quality (IEQ). Other energy efficiency measures are usually very compatible with good IEQ; for example, energy recovery may reduce the energy burden of outdoor air, especially in extreme climates. Some upgrades, such as the tune up and maintenance of heating, ventilating, and air conditioning (HVAC) systems, can in fact improve IEQ by removing contaminant sources. Certain energy-saving projects, such as night pre-cooling, have the potential to degrade IEQ, but can be made compatible with appropriate adjustments. For details, ask your account manager for a copy of EPA's paper ***Energy Efficiency and Indoor Environmental Quality in Schools.***



performance targets, plan energy efficiency improvements, and see measured progress over time. ENERGY STAR also offers technical support, resources, and tools to improve the energy performance of all your buildings, while providing a better learning and working environment for students and teachers.

Each school that scores 75 or better, while maintaining indoor air quality that meets or exceeds industry standards, can apply for the ENERGY STAR label—a bronze plaque to display on the school.

To determine the ranking of your schools, visit EPA's online energy performance rating system. Go to www.epa.gov/buildings and click on "ENERGY STAR Label for Buildings."

Read the eligibility criteria, and then insert building data on occupancy, physical features, and monthly energy consumption. After factoring for location and weather, the rating system calculates each building's relative score and prepares a Statement of Energy Performance, which you can download.

Improving the energy performance of the nation's schools to meet ENERGY STAR guidelines could reduce annual carbon dioxide emissions by more than 28 million tons, which is equivalent to eliminating the emissions from 6 million cars per year.

Make a difference with ENERGY STAR!

The Big Picture

GAO estimates that it would take $112 billion to bring U.S. schools into good condition. This does not include funding for construction of the estimated 5,000 new schools needed between now and 2005.

Savings generated from reducing energy waste can be used to repair and renovate schools. Cost-effective energy performance improvements in the nation's schools represent a $7 billion investment opportunity with the potential to return $28 billion over the life of the investments. Thus, one-quarter of the renovation needs identified by GAO could be met through energy performance improvements.

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Money Isn't All You're Saving

ENERGY STAR®

Financing Profile of Success Miami-Dade County Public Schools

Miami-Dade County Public Schools—Stats at a Glance

Finance Vehicle	Tax-exempt lease purchase agreement (via master lease)	
Program Director	Jaime G. Torrens	
Financing	Total amount financed	$ 9.5 million
	Investment per square foot	$3.80/sf
	Financing term	10 years
Cost Savings	Simple payback period	7.9 years
	Annual positive cash flow	$1.2 million
	Total benefit over term	$16.6 million
Energy Savings	Annual energy savings	28 million kWh
Pollution Prevention	Annual CO_2 emissions	48 million lbs.
	Car pollution equivalent	4,860 cars

Focus: This profile showcases how one of the nation's largest school districts improves its facilities and maximizes energy savings by using an existing tax-exempt master lease program to pay for a guaranteed savings performance contract.

Rationale for Efficiency

With a $61 million annual utility budget, Miami-Dade County Public Schools (MDCPS) must carefully manage their energy expenses. This school district is the fourth largest in the country and has one of the most advanced third-party financing programs for its 318 K-12 schools.

Financing Building Upgrades in Miami-Dade County Public Schools

In 1994, having seen other organizations struggle to successfully implement energy efficiency measures, the school district decided to pursue the advantages of a performance contract, while ameliorating risks. Staff developed a plan to finance energy upgrades through guaranteed energy performance contracting (GEPC), using three energy services companies (ESCOs). Rather than finance projects through the ESCOs, however, MDCPS lowered the total project cost by financing the energy upgrades through their existing tax-exempt master lease. The lease was already being used to procure other capital equipment, such as buses, and to fund new school construction and other projects.

The Energy Savings are Real: Miami-Dade County Public Schools' Track Record

Overall, MDCPS have financed approximately $500 million in purchases through the master lease program since 1988, including $9.5 million in energy efficiency measures. The $9.5 million investment has yielded operational cost reductions of over $3.5 million the first 3 years–excess savings that have been used to enhance educational programs.

Creative Financing and Resource Leveraging

The first or "pilot" phase of the district's GEPC program included selecting representative schools, issuing an RFP, choosing the most qualified ESCOs, and installing energy conservation measures in

"We selected three energy services companies to work under our guaranteed energy performance contracting program. Rather than having them finance the project at a higher cost, we decided to finance it internally using existing funding mechanisms."

Jaime G. Torrens, Senior Executive Director, Division of Energy, Communications, and Fiscal Management

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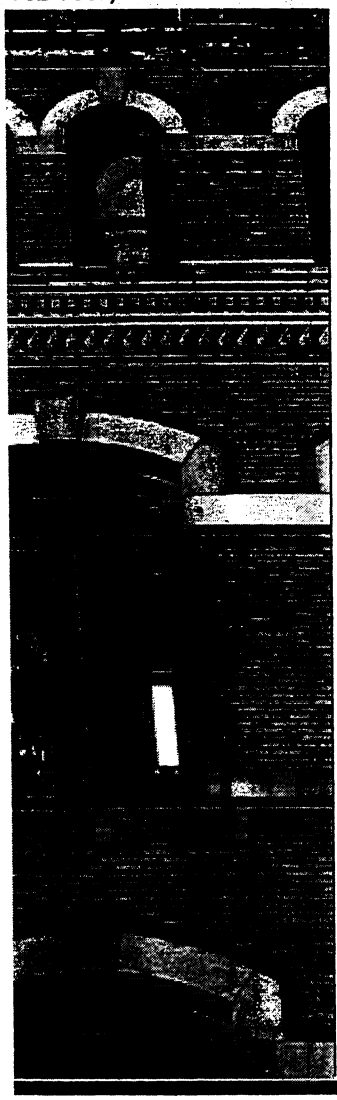


18 schools. Once the individual projects were completed, staff began monitoring their performance and verifying that the expected savings were being realized. MDCPS initially worked with three ESCOs to promote competition. Two firms, Siemens Building Technologies and FPL Services, were retained for the second phase.

Of all the district's efforts, the most innovative and productive was its approach to structuring guaranteed energy savings contracts. Rather than use existing energy service agreements offered by the ESCOs, district staff developed a new contract that was applied to the three firms involved. Because the contract requires that savings be proven and documented rather than stipulated, the ESCOs must perform monthly monitoring and verification of actual energy cost reductions–an activity that is included in the overall cost of the project and paid for from the savings. If the recorded savings are less than the guaranteed amount, the ESCOs must reimburse the school district for the shortfall. Also, instead of a traditional performance bond, Chief Financial Officer Richard Hinds and Treasurer Eduardo Alfaro insisted that the ESCOs post a letter of credit to ensure that the district's capital investment was fully protected in the event of under performance.

MDCPS verify compliance with the savings guaranteed in three ways:

- Staff compare actual utility bills to the base year. Diverse adjustments are allowed for changes in energy usage at individual schools, such as expanded educational programs, increases in student population, changes to the physical plant, and weather normalization.
- The energy management system installed at each school detects significant changes in operating schedules that may affect energy usage.
- If necessary, an inspector places monitors on specific equipment onsite to verify actual energy usage. [This has not occurred so far.]

Because of the size of the master lease, the school district has issued Certificates of Participation (COPs). The next COP issue will sell for $128 million, of which about $14.2 million is earmarked for measures to improve the efficiency of lighting, air conditioning, motors, and building envelopes. Money will also be invested in energy management technologies. Energy efficiency improvements have become an increasingly important part of the tax-exempt master lease, rising from about 2 percent of the issue in 1994 to 11 percent in 2001.

MDCPS maintain a strict payback policy for energy retrofits that helps keep financing costs low. Investments in the GEPC program must be recovered within 10 years, including financing and indirect costs. Additionally, the district bases its decisions on life-cycle cost accounting, rather than simple payback, yielding a realistic formulation of the overall value of the projects over the contract term.

Lessons Learned from Miami-Dade County Public Schools

- The existing tax-exempt master lease allowed the district to invest in energy equipment, installation, and monitoring.
- Separating financing from other components of the guaranteed energy savings performance contract lowered the school district's investment costs.
- Strict payback policies and life-cycle cost accounting maximized savings and kept finance costs low, which in turn will allow for a progression of projects until cost-effective measures are implemented in all 318 schools.

EPA New England

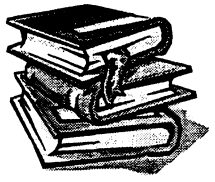
How to Benchmark K-12 School Energy Performance with ENERGY STAR® Portfolio Manager

Why should I measure energy performance in my K-12 school?

Each year, elementary and secondary schools across the United States spend over $6 billion on energy - more than they spend on books and computers combined. Schools can save as much as 25-30 percent of this money by using energy efficient technologies and making sensible changes in operations and maintenance. Wasted energy dollars - $1.5 billion nationwide - can be redirected to the schools' primary mission: education. Saving energy also cuts air pollution, which causes respiratory health problems and contributes to global warming.

The first step toward improving your schools' energy performance is understanding how they are performing today. By "benchmarking" the energy performance of your schools, the web-based ENERGY STAR Portfolio Manager tool allows you to:

- rate your schools' energy performance on a scale of 1-100
- compare their performance to each other and to other schools across the country
- identify those schools with the greatest potential for savings (i.e. lower performing buildings)
- earn the ENERGY STAR label for top performing schools (those scoring 75 or better)
- predict how much money, energy and pollution you will save by improving school energy performance
- track energy performance over time



Using the $1.5 billion schools waste on energy nationwide, school districts could purchase 300 million new textbooks!

What data will I need to enter for each school?

After entering some basic information, the benchmarking tool requires the following data on building physical attributes and operating characteristics for K-12 schools:

- gross square footage
- 12 months of energy consumption data for all fuel types
- weekly hours of occupancy
- number of students
- number of months in operation (per year)
- percent of the building that is cooled
- whether there are cooking facilities in the building

Most of this data should be accessible at your organization, but EPA and your local utility can help you to fill in any gaps. In all cases, missing data can be added at a later time.

EPA New England

EPA New England

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Visit www.energystar.gov for more information.

The ENERGY STAR rating system measures schools on a 1-100 scale. Each hool that scores 75 or better can apply for the ENERGY STAR label—a bronze plaque to display on the school.

How do I get started?

The first step is to set up a Portfolio Manager account. To do this, go to www.energystar.gov. Click on "Benchmark your building's energy performance" at the top. Click the "Login" button on the bottom of the page. Then there are two options:

Option 1

1. Click on the button that says "New User" and follow the instructions. You will be asked to enter your name, address, title, etc., and also to create a user name and password.
2. Once your account is set up, you will be ready to enter data for your buildings. You can set up your account and explore the benchmarking tool even if you are not ready to begin entering data.

Option 2

1. Click on the "Import" button on the bottom.
2. Right click your industry type and "Save Link As."
3. Fill out a spreadsheet template which is in Microsoft Excel format.
4. E-mail the completed spreadsheet template to energystar-buildings@epa.gov.

ENERGY STAR will set up your account for you and send you a reply when your submitted buildings are benchmarked.

ENERGY STAR Buildings Five-Stage Approach

ENERGY STAR has developed proven ways to maximize your school's efficiency while decreasing operating costs and improving comfort at the same time. Through experience, ENERGY STAR partners have seen that how you perform upgrades is as important as which upgrades you implement. ENERGY STAR's five stage sequence is the most logical and effective process of upgrading your building based on the interaction of building systems.

Stage 1.
Green Lights

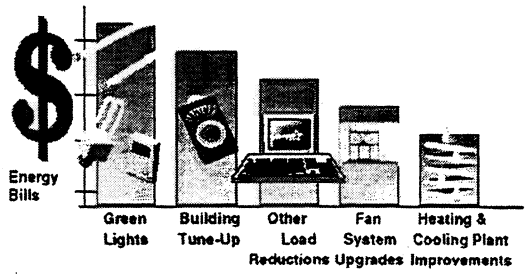
Stage 2.
Building tune-up

Stage 3.
Other Load Reductions
(i.e., office equipment)

Stage 4.
Fan System Upgrades

Stage 5.
Heating and Cooling System Upgrades

The Five Stages of Opportunity



The Bottom Line: Why wait?

With ENERGY STAR it's easy to start improving your school's energy performance today.
If you have questions, please call us (above) or 1-888-STAR-YES.